Terebratulina septentrionalis (Lamp Shell)

Priority 2 Species of Greatest Conservation Need (SGCN)

Class: *Rhynchonellata* (Brachiopods)
Order: *Terebratulida* (Articulate Brachiopods)
Family: *Cancellothyrididae* ()

General comments: none

No Species Conservation Range Maps Available for Lamp Shell

SGCN Priority Ranking - Designation Criteria:

Risk of Extirpation: NA

State Special Concern or NMFS Species of Concern: NA

Recent Significant Declines:

Lamp Shell is currently undergoing steep population declines, which has already led to, or if unchecked is likely to lead to, local extinction and/or range contraction.

Notes:

recent decline - Trott 2004; climate change - Arctic Province species; understudied - understudied, targeted collecting by supply companies

Regional Endemic: NA

High Regional Conservation Priority: NA

High Climate Change Vulnerability:

Terebratulina septentrionalis is highly vulnerable to climate change.

Understudied rare taxa:

Recently documented or poorly surveyed rare species for which risk of extirpation is potentially high (e.g. few known occurrences) but insufficient data exist to conclusively assess distribution and status. *criteria only qualifies for Priority 3 level SGCN*

Notes:

recent decline - Trott 2004; climate change - Arctic Province species; understudied - understudied, targeted collecting by supply companies

Historical: NA

Culturally Significant: NA

Habitats Assigned to Lamp Shell:

Formation Name **Intertidal**

- **Macrogroup Name** **Intertidal Bedrock**
  - **Habitat System Name:** Low-Intertidal ****Primary Habitat**** **Notes:** *spawning, juvenile and adult feeding habitat*
- **Macrogroup Name** **Intertidal Gravel Shore**
  - **Habitat System Name:** Lower Intertidal ****Primary Habitat**** **Notes:** *spawning, juvenile and adult feeding habitat*

Formation Name **Subtidal**

- **Macrogroup Name** **Subtidal Bedrock Bottom**
  - **Habitat System Name:** Bedrock ****Primary Habitat**** **Notes:** *spawning, juvenile and adult feeding habitat*
  - **Habitat System Name:** Erect Epifauna ****Primary Habitat**** **Notes:** *spawning, juvenile and adult feeding habitat*
  - **Habitat System Name:** Kelp Bed ****Primary Habitat**** **Notes:** *spawning, juvenile and adult feeding habitat*
- **Macrogroup Name** **Subtidal Coarse Gravel Bottom**
  - **Habitat System Name:** Coarse Gravel ****Primary Habitat**** **Notes:** *spawning, juvenile and adult feeding habitat*
  - **Habitat System Name:** Erect Epifauna ****Primary Habitat**** **Notes:** *spawning, juvenile and adult feeding habitat*

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Formation Name **Subtidal**

Macrogroup Name **Subtidal Pelagic (Water Column)**

Habitat System Name: Nearshore **Notes:** *larval development and dispersal*

Habitat System Name: Offshore **Notes:** *larval development and dispersal*

Stressors Assigned to Lamp Shell:

Stressor Priority Level based on Severity and Actionability

	Moderate Severity	High Severity
Highly Actionable	Medium-High	High
Moderately Actionable	Medium	Medium-High
Actionable with Difficulty	Low	Low

IUCN Level 1 Threat **Biological Resource Use**

IUCN Level 2 Threat: Fishing and Harvesting of Aquatic Resources

Severity: Severe **Actionability:** Highly actionable

Notes: Large-scale, unintentional catch by commercial trawling reduces population size and subsequently results in local extinctions, impaired role of the functional group "suspension feeders." Likelihood is high (high certainty) and large scale (throughout the region where this species occurs). Actionability is low for incidental catch. Intentional collection by aquarium trade leads to significant population reductions with similar effects. Likelihood is high (high certainty) and small-scale so actionability is high.

IUCN Level 1 Threat **Pollution**

IUCN Level 2 Threat: Agricultural and Forestry Effluents

Severity: Severe **Actionability:** Moderately actionable

Notes: Loss of habitat due to excessive nutrients, toxic chemicals (including pesticides and chemical therapeutants), and/or sediments orginating from aquaculture can reduce populations size. Direct effects could include toxicicity of tributyl compounds shown in other marine invertebrates. Likelihood is high (high certainty). Current spatial extent is expanding along coast along with development of the aquaculture industry , so actionability is moderate, i.e. the threat can be minimized in newly developing areas.

IUCN Level 2 Threat: Industrial and Military Effluents

Severity: Severe **Actionability:** Moderately actionable

Notes: Oil spills are toxic to species with intertidal distributions. Local scale spills have an unpredictable likelihood and actionability is moderate and influenced by response time to spills.

IUCN Level 1 Threat **Climate Change and Severe Weather**

IUCN Level 2 Threat: Habitat Shifting or Alteration

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Ocean acidification are unknown at this time but could result in decreased suvivorship of larvae, and growth and feeding shown in other marine invertebrates. The ability to mitigate ocean acidification is low.

IUCN Level 2 Threat: Temperature Extremes

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Lamp shells are cold-water species. Increased water temperatures may have interactive effects with ocean pH decreasing suvivorship of larvae and growth rate shown for other marine invertebrates. Likelihood is high (high certainty) and large scale. The ability to mitigate sea temperature change is low.

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IUCN Level 1 Threat **Invasive and Other Problematic Species, Genes and Diseases**

IUCN Level 2 Threat: Invasive Non-native-Alien Species-Diseases

Severity: Moderate Severity **Actionability:** Actionable with difficulty

Notes: Invasives such as encrusting colonial tunicates (Didemnum vexillum) could decrease availability of habitat and have other effects largely unknown at this time. Likelihood is high and large scale (throughout the region), so actionability is low.

Species Level Conservation Actions Assigned to Lamp Shell:

None. ***Only species specific conservation actions that address high (red) or medium-high (orange) priority stressors are summarized here.***

Conservation Actions Associated with the Brachiopod Guild:

Conservation Action **Category:** Public Outreach **Biological Priority:** high **Type:** on-going

Encourage the use of more targeted fishing gear in order to reduce bycatch and habitat disturbance

Stressor(s) Addressed By This Conservation Action

Fishing and Harvesting of Aquatic Resources

Conservation Action **Category:** Policy **Biological Priority:** critical **Type:** new

Reduce the collection and possession of live specimens

Stressor(s) Addressed By This Conservation Action

Fishing and Harvesting of Aquatic Resources

Conservation Action **Category:** Research **Biological Priority:** high **Type:** new

Develop molecular tools to identify where specimens are collected.

Stressor(s) Addressed By This Conservation Action

Fishing and Harvesting of Aquatic Resources

Conservation Action **Category:** Policy **Biological Priority:** critical **Type:** on-going

Through education and collaboration, reduce the use of antifouling agents and biocides that negatively affect SGCN, and investigate alternative biofouling agents.

Stressor(s) Addressed By This Conservation Action

Marine and Freshwater Aquaculture

Broad Taxonomic Group Conservation Actions:

Additional relevant conservation actions for this species are assigned within broader taxonomic groups in Maine's 2015 Wildlife Action Plan: Element 4, Table 4-1.

Habitat Based Conservation Actions:

Additional conservation actions that may benefit habitat(s) associated with this species can be found in Maine's 2015 Wildlife Action Plan: Element 4, Table 4-15. Click on the Habitat Grouping of interest to launch a habitat based report summarizing relevant conservation actions and associated SGCN.

The Wildlife Action Plan was developed through a lengthy participatory process with state agencies, targeted conservation partners, and the general public. The Plan is non-regulatory. The species, stressors, and voluntary conservation actions identified in the Plan complement, but do not replace, existing work programs and priorities by state agencies and partners.